

*Lluís Vidaña*

# The dance of seeds

*The germination of knowledge*



Teaching guide

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*The germination of knowledge*



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Art Commission 2:

**Aina Socies, Lluís Vidaña, Nívola Uyà y Enric Socias.** The dance of seeds

Art Commission 3:

**Javier Forment.** Sound Seeds

In collaboration with PLANEA Red de arte y escuela



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This guide is also available in Spanish.

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# Introduction

***The dance of seeds, the germination of knowledge*** is an educational resource part of an artwork created within the art and science collaboration of the Daniel Carasso Fellowship research project "*Seed wars go digital: sustainability, big data and the social movement for open source seed systems*" directed by Raquel Ajates (UNED). The main objective of the project was to analyse the feasibility of alternative models of seed governance, exploring how the concept of the commons and digital open source movements can help protect seeds from an increasing loss of varieties and privatisation. It is essential to recognise the key role of seeds in maintaining the farmers' rights, the sustainability of the food system, and the cultivated diversity in our fields and on our plates. The project included three artistic commissions that resulted in the creation of three artworks that expose with inspiration, creativity and great expertise, the social and environmental issues facing seeds and cultivated diversity, inviting us to reflect on their beauty and importance for human and planetary health, and calling for action to preserve them. The three artworks are: "Mobile Seed Bank" by Marco Ranieri, "The Dance of Seeds. The Germination of Knowledge" by the Associació de Varietats Locals, and "Sound Seeds" by Javier Forment. Each work has generated an open access interdisciplinary educational resource with multimedia material so that its impact goes beyond the exhibitions and reaches more audiences.

The main objective of this educational resource is to invite students to come into contact with seeds of local varieties (specifically from Mallorca, and activities can be adapted to other local contexts), in order to encourage learning, identification and appreciation of them. The aim is to raise awareness of the importance of agricultural biodiversity and the preservation of agricultural heritage.

Through the resources designed for ***The dance of seeds***, students will learn about the seeds of four different crops, their reproduction cycle through illustrations and the stories of the people who care for, grow and select these varieties.

The organisation behind ***The dance of seeds, the germination of knowledge*** is the Associació de Varietats Locals (AVL), which aims to recover, conserve and multiply the local varieties of Mallorca, as well as the associated biocultural memory. For some years now it has been disseminating its work through different graphic materials, such as videos, posters, catalogues, educational materials and textile materials.

It is essential to recognise the key role of seeds in maintaining the rights of producers, the sustainability of the food system, and diversity. Seeds are the basis of life and the basis for healthy and sustainable food.

For more information on the project: <https://www.fondationcarasso.org/es/alimentacion-sostenible/entrevista-raquel-ajates/>



*The pedagogical proposal is aimed at students in secondary education, further education and vocational training; it can be developed in subjects such as biology, geography or art and graphic design, among others.*

# Activities

The activities are divided into three blocks: before, during and after accessing the resources created for the art commission. The proposed order of activities may be modified at the teacher's discretion.



## 2.1. BEFORE ACCESSING RESOURCES

*What do you know about local varieties?*



**Time:** 3 hours

**Place:** Classroom

**Type of activity (to introduce the subject):** Game, background knowledge and exploration

### Objetives

- Playing wari, a board game originating in ancient Egypt.
- Reflect on existing knowledge in relation to local varieties and different related concepts.
- To learn about the role of the Local Varieties Association in Mallorca.
- Explore the role each student can play in the protection of cultivated diversity and landraces.

## Contents

- Board game: Wari.
- Knowledge of basic concepts about local varieties: seeds, plants, seasonality of crops, the relationship between cultivation tradition, oral memory, transmission of knowledge, diversity and the importance of seed preservation.
- Related concepts such as food sovereignty, km0, short circuits, generational renewal, cultivated biodiversity, resilience, climate adaptation, sustainable crops, Sustainable Development Goals, etc.
- Presentation of the Associació de Varietats Locals.

## Activities

### 1. We play Wari

Before starting the game, students are shown seeds of different sizes (minimum of four different varieties). The aim is for them to interact with them; to observe them, smell them, touch them, feel them. What are they? What will they become? What do they need for this transformation? The biggest seeds will be used to play a board game called "Wari". We will play in pairs.

*What is Wari and how is it played?*



**Video explaining how to play:** HOW TO PLAY WARI | (<https://www.youtube.com/watch?v=HunzMxlbghQ>)

### Origin and history

Wari is a game from the family of so-called Mancala games. These games have only recently become known in some western countries. They are played regularly in Africa, in the Middle East, in some eastern parts of Asia and in the Caribbean. Their origins seem to go back as far as ancient Egypt. Much more recently, the slave trade from Africa to the Americas, with the Caribbean as a way station, led to the establishment of such games there.

## Description

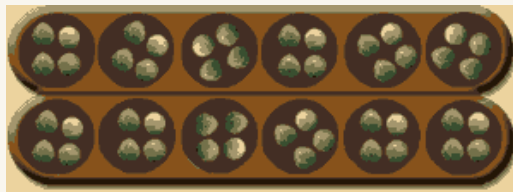
Wari pits two players on either side of a board consisting of two rows of six holes each. Each of the rows is the home side of the player placed nearest to it. In addition, 48 seeds are used to play. In Wari, as in the rest of Mancala games, the seeds are the pieces with which the opponents play but without being linked to any of the sides, both play with all the seeds. The link with each player corresponds to the field, each player has an area of the board.

## Aim of the game

The aim of the game is really very simple: each player has to try to obtain more seeds than his opponent. The winner is the one who has more than half of the seeds in their possession (25 or more).

## Development of the game

→ **Starting position:** The game begins with 48 seeds distributed in the 12 holes (4 in each hole). At the start of the game the board looks like this:



→ **Movements:** Players take turns to move. On your turn, you must select one of the holes on your own side of the board and sow the seeds that you find there. "Sowing" means the act of distributing seeds into the other holes of the board (the player's own and their opponent's), one at a time, counterclockwise and starting with the first hole, which in this direction is first from the hole from which the seeds have come out. If the number of seeds is such that you are able to make it all the way around the board (12 seeds or more), no seeds are ever sown into the hole of origin and this hole is skipped and the seeds are dropped into the following holes as described above: at the end of a move the hole of origin of the seeds must always end up empty.



**How to play:** Mancala video tutorial: How to play/Tutorial | Wari (<https://www.youtube.com/watch?v=rpK3pxv7uhY>)



- **Captures:** In Wari you must try to capture more seeds than the opponent. Captures are performed as follows: if a player on their turn and after having made their sowing move, deposits the last of the seeds of that move in a hole on the opponent's side that has two or three seeds (counting the last one), they must pick up all the seeds (2 or 3) that were in that hole and deposit them in a pile outside the board. If, after picking up the seeds from that last hole, it turns out that the preceding hole (preceding in the direction of sowing) also has two or three seeds and is not on the opponent's side, the player must also pick up these seeds for themselves, repeating this operation until they find a hole that either has neither two nor three seeds, or is not on the opponent's side.
- **Limitations on moves and captures:** If, when a player's turn comes, she or he sees that the opponent's side of the board has no seeds in any of its holes, they must choose a move that introduces some seeds into the opponent's side of the board. If this is not possible, the game ends, and the player whose turn it was to play picks up all the seeds on their own side of the board. If after sowing, the corresponding successive captures leave the opponent's side of the board without any seeds, the move is carried out, but no capture is made.
- **End:** As mentioned above, to win the game it is necessary to capture a minimum of 25 seeds. Among those who play this game it is customary to continue the game, even if the winner is already decided, until it is no longer possible to capture more seeds. If it happens that, before either of the two players reaches the number of seeds required to win, a situation is reached in which, because there are few seeds left, it is not possible to make new captures and the game enters a cycle, each player captures the seeds that are in their own area and the game is over.

**Recommendation:** Use an egg carton as a board. As "tokens" use large seeds, such as chickpeas, peas, beans, etc.





## 2. What do we already know?

The activity is developed through individual, small group and large group work. As this is an initial activity to identify prior knowledge, it is important to allow students to freely express what they know, their opinions, arguments and positions.

The proposed sequence is:

1. On a previously prepared sheet (Table of definitions, see in Material for learners), learners are asked individually to "define in a few words" the concepts that will be mentioned. The concepts should be explained in one of the columns of the sheet. Allow 2 or 3 minutes for each concept (concepts: seeds, plants, local variety, seasonality of crops, traditional cultivation, oral memory, transmission of knowledge, seed diversity, seed preservation, food sovereignty, km0, generational handover, etc.).
2. In small groups (3 to 4 students) ask them to share one by one the 'previous definitions' of each member of the group, identifying the elements of the definition that each person has not included and noting these elements in another column.
3. At the end of the round of exchanges, a group-agreed definition can be constructed for each concept.

### DEFINITIONS FOR TEACHERS

CONCEPT	DEFINITION
<b>Climate adaptation</b>	Climate adaptation refers to the strategies and actions that individuals, communities and governments implement to cope with the effects of climate change, such as rising temperatures, extreme weather events and sea level rise. This includes adjustments in agriculture, infrastructure, water management and other areas to reduce vulnerability to climate impacts and promote resilience. Climate adaptation is essential to mitigate risks and protect society and the environment.
<b>Crop seasonality</b>	Crop seasonality refers to the practice of planting and harvesting plants at specific times of the year, usually depending on climatic and environmental factors such as temperature and sunlight availability. This seasonal planning is crucial to maximise agricultural production and ensure the availability of fresh food all year round.
<b>Cultivated biodiversity</b>	Cultivated biodiversity refers to the variety of plants and animals domesticated by humans for agriculture and food. It includes crops such as cereals, fruits and vegetables, as well as animal breeds bred for meat, milk and other products. The preservation of cultivated biodiversity is essential for food security and climate adaptation.
<b>Generational renewal</b>	Generational renewal refers to the process in which a younger generation assumes responsibilities and roles that were previously performed by an older generation, both in family and professional contexts. This process is fundamental to the continuity of traditions, knowledge and leadership in society, enabling the transfer of experience and the evolution of the community or company.

<b>km0</b>	"Km0" refers to the production and consumption of local food, with a focus on reducing the distance between the place of production and the place of consumption, usually within a radius of a few kilometres. This practice seeks to promote sustainability, support local farmers, reduce the carbon footprint and provide fresh, seasonal food to communities. It is an important part of sustainable agriculture initiatives and the quest for greater connection between producers and consumers.
<b>Knowledge transmission</b>	Knowledge transmission is the process of sharing information, skills and wisdom from one person or generation to another. It can occur through teaching, formal education, practical experience, writing, oral communication or modern technologies. It is essential for the continuity of learning and the progress of society.
<b>Local variety</b>	A local variety refers to a subcategory of a plant species that has developed unique characteristics in a specific geographical region due to adaptation to the local environment and traditional agricultural practices. These varieties are often valued for their resistance to local conditions and for their genetic diversity, which contributes to agricultural biodiversity and food security
<b>Oral memory</b>	Oral memory refers to the tradition of transmitting knowledge, stories and culture from one generation to the next through spoken accounts rather than written means. This form of preserving history and wisdom is common in cultures that do not have a strong written tradition and can be vulnerable to loss over time if not properly recorded.
<b>Plants</b>	Plants are autotrophic organisms that photosynthesise to produce their own food from sunlight, water and carbon dioxide. They are a fundamental part of the biosphere, providing oxygen and playing a crucial role in terrestrial ecosystems. They can vary in size, shape and function, ranging from small grasses to giant trees.
<b>Reproductive material</b>	Reproductive material refers to any biological substance that carries the genetic information necessary for the reproduction of an organism, such as DNA in living organisms. It may include reproductive cells, such as sperm and eggs, or structures such as seeds in plants, which contain genetic information to create new generations.
<b>Resilience</b>	Resilience is the capacity of an individual or community to adapt and recover in the face of adverse or challenging situations, such as natural disasters, economic crises or traumatic events. It involves the ability to resist, overcome and learn from difficulties in order to develop greater strength and resilience. Resilience is essential for coping with and overcoming obstacles in life.
<b>Seeds</b>	A seed is the biological structure that contains the genetic information of a plant and the initial food for its growth. It can be a small grain that is sown in the soil to grow a plant or tree. Seeds are essential in plant reproduction and food production.
<b>Seed preservation</b>	Seed preservation is the process of conserving and storing plant varieties under controlled conditions to ensure their long-term viability. This is fundamental for the conservation of agricultural biodiversity and food security, as it ensures access to seeds of traditional and rare crops. It takes place in seed banks and through seed selection and exchange by farming communities.
<b>Sustainable crops</b>	Sustainable crops are those that are grown in ways that minimise negative impact on the environment and promote the conservation of natural resources. This involves farming practices that are respectful of soil, water and biodiversity, as well as reducing reliance on harmful chemicals. The aim is to maintain long-term productivity without depleting resources or damaging the environment.
<b>Sustainable Development Goals (SDGs)</b>	The Sustainable Development Goals (SDGs) are a set of 17 global targets set by the United Nations in 2015 to address global challenges such as poverty, hunger, gender equality, education, health and environmental sustainability by 2030. The SDGs seek to promote equitable and sustainable development, involving governments, civil society and the private sector in their implementation. Each goal has specific targets to measure progress towards a more prosperous and just world.
<b>Traditional cultivation</b>	Traditional cultivation refers to agricultural practices that have been passed down from generation to generation over time and are based on local and regional methods and knowledge. These techniques are often sustainable and adapted to the specific environment, using indigenous crop varieties and environmentally friendly cultivation methods. Traditional cultivation often preserves genetic diversity and promotes the resilience of rural communities.

### 3. What is the Associació de Varietats Locals of Mallorca? What other similar associations exist in your area?

The Associació de Varietats Locals is a non-profit organisation that was set up in 2002 by a group of farmers, technicians and researchers of agrobiodiversity in the Balearic Islands, and which operates mainly in Mallorca. The organisation works for the recovery of local varieties of vegetables, legumes, cereals and fruit trees, as well as the knowledge of the associated farmers. It promotes the promotion of the production and conservation of cultivated biodiversity; and the collective management of agrobiodiversity as a common heritage.

The session ends with the students viewing a video about local varieties. Some of the concepts from the previous activity are mentioned in the video. It can be explained to the students that the Associació de Varietats Locals is responsible for the creation of the resources that will be shown in the following session. At the end of the viewing, the group can discuss the aspects that have caught their attention.



#### **What are local varieties?** (<https://www.youtube.com/watch?v=2gRT4THKQag>)

There are many community seed organisations across the world that save and distribute local seeds. To conclude this activity, students can look for a seed group in their local area, and/or in the country or region where their family is from, a place they regularly visit, etc.

#### **Material**

- Seeds of four different varieties.
- To play Wari: 1 x 12-egg box and large seeds.
- Sheet with columns for definitions (available under Student materials).
- Computer and projector.

#### **Evaluation**

- A self-assessment is proposed as a reflection of prior knowledge.
- Assessment to identify the ability to argue and explain the process of defining concepts.
- Observation to identify key concepts to work on in subsequent activities.



# THE RESOURCES

## *The dance of seeds*



**Tiempo:** 1.5 hours

**Place:** Classroom

**Type of activity:** Collaborative, analytical and synthesising

### Objetives

- Analyse plant growth and development.
- Extract concepts, ideas and arguments from the interviews.
- Reflect on the climate emergency, the role of women in the countryside, healthy and sustainable food, alternative consumption models to globalisation, the genetic diversity of local varieties and their resilience to climate change.

### Contents

- Knowledge of the reproductive cycles of the Mallorcan chickpea, Callet, Mallorcan barley and ros pepper.
- Interviews with people responsible for seed multiplication of local varieties.

### Activities

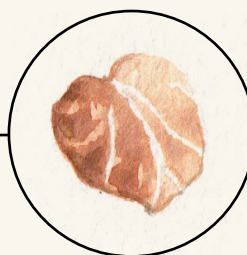
#### 1. Plant variety teams

The students are divided into four teams. One for each variety: Mallorcan chickpea, ros pepper, Mallorcan barley and red grape variety Callet. Each group will be given worksheets that they will have to complete by viewing the interviews and animations of *The dance of seeds*. Each worksheet is personalised according to the plant variety assigned to the team. The activities they will find in them are as follows:

- Order the variety's germination cycle starting from the seed.
- Answer the questions based on the interviews.
- Wordsearch
- True or false?
- Reflections

**Recommendation:** The groups should be mixed. The activity *Ordering the germination cycle* can also be tried before watching the animation to see to what extent they are able to intuit the natural process. On the other hand, *answering the questions* can be done in a more interactive way with the use of trivia cards, a container with questions cards, teams quizzing each other, etc.

Below, you will find the worksheets with answers. The student versions are available in *Material for students*. It is preferable to print the first page of each one in colour.



***Cicer arietinum***  
Ciuró mallorquí  
*Mallorcan chickpea*

# Team Chickpea

Date: .....

Names of the team members:

.....  
.....  
.....

**Welcome!** We present **Miquela Vanrell** who has a lot to tell you about the **Mallorcan chickpea**. Access her interview to complete the activities that follow:



<https://youtu.be/m9JtPZuEYLs>

**Miquela Vanrell**

Finca 5 elements, Alcúdia



**1. Order the germination cycle of the Mallorcan chickpea starting with the seed.**



**2. Answer the questions based on the interview that you have watched.**

**a.** Who owned Miquela's estate before her?

*Miquela's finca belonged to her grandmother and great-grandmother before it was abandoned during the tourist boom in Mallorca in the 1950s and 1970s.*

**b.** What is needed when processing large quantities of chickpeas?

*Specific machinery is needed to process large quantities of chickpeas, as the manual process is labour-intensive and not feasible for large-scale production..*

**c.** What are the distinctive characteristics of the Mallorcan chickpea in terms of size, cooking texture and flavour, compared to chickpeas from other regions?

*The Mallorcan chickpea is distinguished by its smaller size, harder texture when cooked and a particular taste compared to chickpeas from other regions.*

**d.** What is the main use of the Mallorcan chickpea? For whom is it intended to be consumed? What are the implications for the production process?

*The Mallorcan chickpea is mainly destined for human consumption and not for animal consumption. This implies a more delicate production process and the need to maintain high quality standards.*



- e. What marketing channels do they use and in what form is the product sold?  
*Chickpeas are marketed both in the form of sacks of dried chickpeas and in jars of cooked chickpeas in Mallorca.*
- f. What are the difficulties associated with chickpea production in Mallorca in contrast to production on the mainland?  
*The difficulties associated with chickpea production in Mallorca include the lack of efficient machinery and the fact that most of the extensive crops on the island are destined for animal consumption.*
- g. Why does a jar of Mallorcan chickpeas cost more than those coming from the mainland?  
*A jar of Mallorcan chickpeas costs more than one coming from the mainland due to the lack of efficient and competitive machinery for processing and cleaning chickpeas in Mallorca.*
- h. Miquela feels fortunate to have a farm where *the soil* seems to be what the chickpea likes.
- i. Why does Miquela think that it doesn't make sense to take what little production there is on the island elsewhere?  
*Miquela thinks that it does not make sense to take the little production there is on the island elsewhere due to the lack of competitiveness in terms of price and efficiency in the production chain.*
- j. What day of the year are chickpeas sown and why?  
*Chickpeas are sown around 9 February in Mallorca due to a tradition that says that this is the right date for them to grow well.*
- k. When and how is harvesting carried out?  
*The chickpea harvest takes place in late June or early July, depending on the weather. The harvesting machine had to be adapted to be able to harvest chickpeas.*
- l. Why does Miquela think it is important to recover and maintain local varieties?  
*Miquela believes it is important to recover and maintain local varieties because of their adaptation to the land and their cultural and historical value.*
- m. How has the attitude towards agriculture changed compared to previous generations?  
*The attitude towards agriculture has changed, with a greater awareness of sustainability and the importance of the preservation of local crops.*
- n. What is the relationship between the tourist industry and agricultural activity in Mallorca, and is it balanced?  
*In Mallorca, the tourist industry has had a major impact on agricultural activity, and Miquela advocates finding a balance between the two industries.*

3. **Wordsearch.** Look for the following words that appear in the interview: **boat, machinery, peninsula, taste, flour, sack, agribusiness, tourism, balance and fertiliser.**

U M A C H I N E R Y G U O L S  
Y X R U R U W L T J A N F D Y  
W N M L R Q L C R G J T B W C  
D O F K Y M Z S I P E R X G G  
T U E U H Z E W J P W E S K N  
O T R F P N D S J I O B T O G  
U F T R U O L F T A O B E G T  
R E I A U A L U S N I N E P L  
I E L J Y X U T Y U E T K E Z  
S S I D C T K G T H O T N C A  
M V S S D C M O Y Z X W S N E  
C V E A A S F Z V L V Y K A P  
B B R S H K I J Z T H W P L T  
A G R I B U S I N E S S G A I  
J R G I N V V S S G S Z K B Q

4. **True or false?** Indicate which of these statements are true and which are false. **Correct the false ones:**

Miquela's farm belonged to her uncle before it was abandoned. <i>(False, it belonged to her grandmother and great-grandmother)</i>	V	F
Cultivation requires many hands to process large quantities <i>(False, machinery is required to process large quantities).</i>	V	F
The Mallorcan chickpea has a taste that reminds the elderly of times gone by.	V	F
The legume has been mainly used in culinary recipes, both as a seasoning and cooked.	V	F
Chickpeas are intended for animal consumption and therefore do not require a very careful cleaning process. <i>(False, the Mallorcan chickpea is intended for human consumption and requires a careful cleaning process).</i>	V	F
Miquela only sells her chickpeas in (dry) sacks. <i>(False, she also sells jars of cooked chickpeas).</i>	V	F
The price of the jar of Mallorcan chickpeas is cheaper than the jar from the mainland <i>(False, the jar of Mallorcan chickpeas is more expensive due to the lack of efficient machinery).</i>	V	F
Miquela's father tells his daughter that work in the fields used to be very hard.	V	F
According to Miquela it is better to bring everything that is eaten in Mallorca by boat from the mainland <i>(False, what we need is to stop consuming things from elsewhere and improve our production and make it sufficiently efficient).</i>	V	F
The root of the chickpea plant leaches nitrogen into the soil (natural fertiliser).	V	

5. **Reflect on the following question:** How has the balance between the tourism industry and agricultural activity evolved in Mallorca, and what is the importance of maintaining a sustainable and balanced relationship between the two sectors?



***Callet . Vitis vinifera***  
Raim Negre varietat Callet  
*Red grappe variety Callet*

# Team Grape

Date: .....

Names of the team members:

.....  
.....  
.....

**Welcome!** We present **Rosa Pons** who has a lot to tell you about the **red grape variety Callet**. Access her interview to complete the activities that follow:



<https://youtu.be/5yLx33PmIdU>

**Rosa Pons**

Can Axartell, Pollença





**1. Order the germination cycle starting with the cutting and ending with the seed.**



**2. Answer the questions based on the interview that you have watched.**

a. What is Rosa Pons' profession?

*Rosa Pons is an agricultural engineer.*

b. What crops do you grow on the Can Axartell estate?

*The Can Axartell estate has olive trees, vines and carob trees.*

c. What is phylloxera? What happened in Mallorca when phylloxera arrived?

*Phylloxera is a pest that plagued vineyards in Europe around 1890. It also arrived in Mallorca, causing a major crisis in grape and wine production.*

d. Why is there interest in recovering varieties such as the Callet?

*The interest in recovering varieties such as Callet is due to the fact that these native varieties are exclusive to the region and produce unique wines that are not found elsewhere. Moreover, these varieties are adapted to the local climate and soil, which makes them resistant to climatic changes and droughts.*

e. What are the characteristics of this grape variety?

*The grapes of these native varieties are large, with large berries and non-homogeneous colours. They are versatile, as they can be used both for wine and table grape production. They are adapted to local conditions and are able to withstand water shortages.*

- f.** What makes staggered collection possible?  
*Staggered harvesting allows different types of grapes to be harvested at specific times, from white or rosé grapes to red grapes, enabling the production of different types of wine.*
- g.** What is the Callet variety adapted to?  
*It is very well adapted to the environment, the soil and the microclimates of Mallorca.*
- h.** According to Rosa, globalisation standardises, but what are visitors looking for?  
*Rosa Pons mentions that visitors are looking for authentic experiences and local products rather than the uniformity of globalisation. These unique, indigenous varieties offer them the opportunity to taste wines that are not found elsewhere in the world.*
- i.** What is the need for climate change in Mallorca?  
*Due to climate change in Mallorca, there is an increasing need for irrigation systems to keep the vineyards in optimal conditions. Lack of water can be a challenge for viticulture.*
- j.** How long can the Callet vine live?  
*Callet vine and other varieties can live up to 50, 60 or even more years, making it a long-lasting crop.*
- k.** What does she mean when she says that the vine is a creeper?  
*The vine is considered a creeper due to the nature of its growth, which requires a support system, such as poles or trellises, to keep it upright.*
- l.** How do you decide when the grape harvest starts?  
*The day on which the harvest begins is decided by monitoring parameters such as the level of sugars, acidity, pH and colour of the grapes. This decision is crucial to determine the optimum time for harvesting.*
- m.** How is it harvested?  
*Harvesting is done by hand, with the help of baskets and a team of local workers. After the harvest, the grapes are taken to the winery for processing.*
- n.** How do they facilitate the expansion of local cultivation?  
*On the Can Axartell estate there is an experimental plot with different varieties of Mallorcan grapes, varieties that have been gaining prominence. They invite other people from the sector to come and look for plant material to cultivate.*

3. **Wordsearch.** Look for the following words that appear in the interview: **phylloxera, grapevine, grape harvest, winery, creeper, fermentation, fruit tree, temperature, pest and vineyard.**

U Y L Z N X G X N T R L C Q V  
A S H P X L **D R A Y E N I V B**  
**T D T F D M E N I V E P A R G**  
**E D X W B D I M T T O G F F D**  
**M A Q G O Y M Y C R E E P E R**  
**P C A V A L Q L R B U V Q A L**  
**E C G I Y C U L I L K I R Y W**  
**R D F E R M E N T A T I O N I**  
**A G R A P E H A R V E S T H N**  
**T P T I U U Y Q N Y N O K B E**  
**U H P H Y L L O X E R A T K R**  
**R Z T J H W D V M F T S E P Y**  
**E P E E R T T I U R F R A M J**  
Y N I F F R T G D P N U Z E R  
Y G Q M J F G Y H H Q X Y J N

4. **True or false?** Indicate which of these statements are true and which are false. Correct the false ones

The Merlot and Syrah are French vines.	V	F
The solution to resist the phylloxera plague was to graft the grape varieties onto African rootstock. <i>(False, the solution was to graft the grape varieties onto American rootstock).</i>	V	F
Wine made from callet has a pepper-like taste.	V	F
The callet allows different types of wine to be made: white, rosé, red.	V	F
The vine is a plant that is planted every year. <i>(False, vines are not planted every year, but are planted and maintained for many years).</i>	V	F
The vines never have to be watered. <i>(False, although it is mentioned that sometimes vines are not irrigated, under normal conditions, irrigation may be necessary in vineyard agriculture).</i>	V	F
The grape harvest begins on the 1st of September. <i>(False, the decision on the day to start harvesting is based on parameters such as sugars, acidity, pH and colour of the grapes).</i>	V	F
The grapes are harvested by a team of local people.	V	F
The grapes are harvested by hand.	V	F
The grapes are harvested by hand.	V	F

5. **Reflect on the following question: What challenges does viticulture face in a context of climate change and droughts, and how can local varieties be a solution?**





***Hordeum vulgare***

Ordi mallorquí

Mallorcan barley

# Team Barley

Date: .....

Names of the team members:

.....  
.....  
.....

**Welcome!** We present **Cosme Soler** and **M<sup>a</sup> Eulalia Adrover**, who have a lot to tell you about **Mallorcan barley**. Access their interview to complete the activities that follow:



<https://youtu.be/sb8ksUgiLrA>

**COSME SOLER / MA EULÀLIA ADROVER**

Son Soler, felanitx



**1. Order the germination cycle of Mallorcan barley starting with the seed.**



**2. Answer the questions based on the interview that you have watched.**

- a. What was the profession of Cosme's parents? Do their children help them in the fields?

*Cosme's parents were farmers. Yes, their children help in the fields.*

- b. How do M<sup>a</sup> Eulalia and Cosme distribute their tasks? What does each of them do more of?

*M<sup>a</sup> Eulalia is mainly in charge of grinding the barley to feed the pigs, while Cosme is mainly in charge of the sowing, although everyone participates.*

- c. What advantages does Mallorcan barley have over other imported varieties?

*The advantage of Mallorcan barley over other imported varieties is its resistance and adaptation to local conditions, especially in areas with thin soils and water scarcity.*

- d. What are the characteristics of Mallorcan barley?

*Mallorcan barley is a rustic, strong, early variety, adapted to the local climate and conditions. Although it is not as productive as some foreign varieties, it is capable of producing even in drought conditions. It has taller canes and produces more straw than other varieties, although it may have less grain.*

- e. What uses is barley put to on the Son Mesquida estate?  
*On the Son Mesquida estate, they use Mallorcan barley to feed the pigs (they make flour for the pigs), for sowing and for grazing the sheep.*
- f. What does the term "local variety" mean for M<sup>a</sup> Eulalia and Cosme?  
*The term "local variety" means that the barley is adapted to the specific climate and conditions of the region. Although attempts may be made to introduce it in other places with similar microclimates, it is generally grown where it is best adapted.*
- g. What is the sifting process?  
*The sifting process consists of separating impurities, such as weeds and unwanted seeds, from the harvested barley grain in order to obtain a cleaner seed suitable for sowing.*
- h. According to Cosme: "Mallorca for its small size has a great variety of microclimates".
- i. What is the name given to the farmer in charge of producing and increasing the quantity of seeds of certain plant varieties, ensuring their availability for future sowing?  
*He/She is known as a "multiplier".*
- j. Why is it difficult to multiply and save seeds of some local varieties?  
*Multiplying and saving seed of some local varieties is complicated by the need to avoid cross-contamination with other varieties and to maintain genetic purity. Moreover, not all farmers are willing or able to carry out this process.*
- k. How has the perception of local varieties changed in recent times?  
*They are most valued for their quality and taste. In the past, many of these varieties were in danger of disappearing.*
- l. Why does Cosme consider that the cultivation of Mallorcan barley is not so much a cultural question as a necessity?  
*Cosme considers the cultivation of Mallorcan barley a necessity due to local conditions, especially in areas with thin soils and water scarcity.*
- m. How does M<sup>a</sup> Eulalia describe the mentality and attitude that a farmer should have towards his work?  
*M<sup>a</sup> Eulalia explains that a farmer must be a farmer out of love for his work. He must enjoy every stage, from sowing to harvesting and consumption.*
- n. Why does Cosme find his work in agriculture and animal husbandry rewarding?  
*Cosme finds his work in agriculture and animal husbandry rewarding because you can see the results of the effort at all times. Despite the long working hours, he enjoys what he does.*

3. **Wordsearch.** Look for the following words that appear in the interview: family, pigs, sheep, grinder, moisture, microclimate, cereal, sift, love and quality.

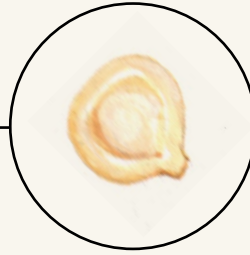
E C C F B L M M D Z D N M G C  
 M I C R O C L I M A T E I C Z  
 D U W A S U E J W M N Y R Z H  
 R A X C Q U A L I T Y C L Z F  
 A D O V C S N R V Y P Z M M F  
 J S Z S Q P F A M I L Y R W H  
 M J A X E S H E E P L G H O X  
 B L X P R P A S L A E R E C I  
 W Z S E U R V Q O Q M R O H S  
 B F H A T G R I N D E R L P E  
 G L M T S B S T L V W Q Q K W  
 P I G S I N K X P V X X N E F  
 E X H N O P E M N X N O P R P  
 S E K Z M U A L Y T F I S E K  
 H Z H W F L O V E P K V F Z N

4. **True or false?** Indicate which of these statements are true and which are false. Correct the false ones

The land in Son Mesquida tends to have excess water. <i>(False, the area is usually without water).</i>	V	F
Eulàlia and Cosme's children study but do not take part in the farm work. <i>(False, the children help with the work in the fields and know many things about it).</i>	V	F
Mallorcan barley is more productive than foreign varieties. <i>(False, Mallorcan barley is not as productive as some foreign varieties, but it is better adapted to the region).</i>	V	F
Mallorcan barley is more rustic and primitive compared to other varieties.	V	F
Eulàlia is mainly in charge of sowing barley <i>(False, Cosme is mainly in charge of sowing barley).</i>	V	F
On the Son Mesquida farm, the barley is used to fatten pigs, make flour and feed the hens. <i>(False, ...and feed the sheep)</i>	V	F
Cleaning barley involves separating the grain from impurities.	V	F
Multiplying and saving seeds of local varieties is a simple process. <i>(False, the process can be complicated and requires care).</i>	V	F
Local varieties are more highly valued than in the past. <i>(False, they are more valued than a generation ago but not more than in the past).</i>	V	F
Cosme finds his work rewarding and it brings him quality of life.	V	F

5. **Reflect on the following question:** What are the differences between feeding animals on local farms with organic feed and feeding animals on large-scale farms with GM feed in relation to the quality of the feed and its effects on health and the environment?





*Capsicum annuum*  
Pebre Ros  
*Ros pepper*

# Team Pepper

Date: .....

Names of the team members:

.....

.....

.....

**Welcome!** We present **Cati Vaquer** who has a lot to tell you about the **ros pepper**. Access her interview to complete the activities that follow:



[https://youtu.be/\\_NcDnvAZsYM](https://youtu.be/_NcDnvAZsYM)

**Cati Vaquer**

Ca na Justa, Porreres



**1. Order the germination cycle of the Mallorcan pepper starting with the seed.**



**2. Answer the questions based on the interview that you have watched.**

- a.** What has been the key to the success of the 4 generations that have dedicated themselves to planting local varieties in Ca Na Justa?

*The key to the success of the 4 generations that have dedicated themselves to making local varieties at Ca Na Justa is to keep the local varieties as pure as possible.*

- b.** By what other name does Catalina call the thin pink pepper?

*Catalina calls the thin pink pepper "the thin man of Sant Jordi".*

- c.** What is the advantage of the thicker ros pepper over the thinner ros pepper when it comes to consumption?

*The advantage of the thick ros pepper over the thin ros when it comes to consumption is that the thick ros can be grilled once it turns red, whereas the thin ros becomes too thin and falls apart when grilled.*

- d.** How popular is the ros pepper in Mallorca and where is it most commonly found?

*The ros pepper is very popular in Mallorca and is commonly found in restaurants, markets and private homes. It is widely consumed due to its versatility in the kitchen.*

- e. What characteristics stand out in the taste and texture of the Mallorcan ros pepper?  
*Its mild flavour, tender texture, and lack of a strong lingering peppery taste stand out.*
- f. What curious coincidence do Catalina and her grandmother share about the origin of the ros pepper?  
*Her grandmother went to Sant Jordi to fetch the ros pepper, which coincides with the story of a man who visited Catalina and recognised her as Mrs. Justa and it turned out that she had gone to fetch the thin ros pepper from Sant Jordi at her husband's aunt's house.*
- g. Which pepper specimens are selected for seed multiplication?  
*To multiply pepper seed, the most beautiful and straightest specimens of the plant are selected.*
- h. Planting starts at the end of October until *March* (when sowing also starts).
- i. Once the seed is extracted from the pepper, what do you do with it?  
*Once the seed is extracted from the pepper, it is cleaned, dried and stored in a dark, dry place for subsequent sowing.*
- j. In which generation of Catalina's family were hybrids introduced and what is their current status?  
*In Catalina's father's time, hybrids started to exist, but between her father's generation and his daughter's generation, people have gone back to local varieties.*
- k. What are young people's attitudes towards growing and consuming local and organic agricultural products?  
*The new generations show a positive attitude towards planting and consuming local and organic agricultural products. They are interested in having vegetable gardens and consuming organic products.*
- l. What are the Balearic Islands known for, and what should they also be known for?  
*The Balearic Islands are known for their sun and beach tourism, but they should also be known for their local produce and gastronomy.*
- m. What colour do peppers turn when ripe?  
*The ros pepper turns red as it ripens.*
- n. When the thin ros pepper is harvested tender, is it to be eaten raw or cooked?  
*When the thin ros pepper is harvested tender, it is best eaten raw in soup, in rice or to make dishes such as Mallorcan salad.*

3. **Wordsearch.** Look for the following words that appear in the interview: pepper, horticultural, generation, salad, seedling, heritage, culture, gastronomy, hybrid and sun.

F Y Y P E P P E R S Z E S U N  
P B C Y X J S K D S B H W C W  
I H D U O X J W A Q G D I H R  
G E O Y L N O I T A R E N E G  
C A T S G T L A S E R J S R L  
O D Q P A F U T E M F M I I R  
G R W Q N L R R G S Y B O T W  
N B C T V O U D E M A K K A W  
I G U L N E I T V T W L R G P  
L K F O O T P L T E I S A E T  
D O M D C S O A P F K M L D E  
E Y K A B G S E H Y B R I D T  
E H O R T I C U L T U R A L M  
S G T E U A U N M F B F A G J  
J L M Z K W O G Y M X F V M U

4. **True or false?** Indicate which of these statements are true and which are false. Correct the false ones.

At Ca Na Justa they are dedicated to making vegetable seedlings of local varieties.	V	F
Catalina Vaquer is part of the second generation of plant breeders whose success has been to maintain the local varieties in maximum purity. (False, ...is part of the fourth generation of nursery owners)	V	F
The farm has two varieties of peppers: the thin ros and the thick ros.	V	F
The thin ros pepper is also called "the thin man of Sant Joan".	V	F
The thin ros pepper is mainly used for roasting. (False, ...the thick ros pepper is used)	V	F
The ros pepper is not very popular in Mallorca. It is difficult to find in restaurants, markets and homes. (False, ...it is well accepted... It is easy to find...)	V	F
The ros pepper is known for its mild flavour and tender texture.	V	F
Ca Na Justa's clients are private individuals, not large companies.	V	F
The new generations in Mallorca show interest in growing and consuming local and organic agricultural products.	V	F
The twisted peppers are used to make seed. (False, ...twisted peppers are NOT suitable for making seed)	V	F

5. **Reflect on the following question:** What are the main challenges facing farming families in terms of sustainability, innovation and economic viability? Is generational renewal happening?



## 2. Self-marking

The answers are given to the students, but instead of self-marking individually,, the groups exchange cards and mark each others' work.

## 3. Sharing

Each group will present to the other groups a summary of the video of their crop. In a large group, a series of reflections are made based on the following dilemmas:

- How do local varieties contribute to crop adaptation to changing climatic and environmental conditions?
- What role do local varieties play in preserving genetic diversity and crop resistance to diseases and pests?
- How might the loss of local varieties affect the cultural richness and food traditions of a community?
- Do you think there is gender equality in agricultural work today?
- How can local varieties boost agricultural and economic sustainability at the local level, and what long-term benefits might arise from their conservation and promotion?

### Material

- "The dance of seeds" videos.
- Worksheets of activities for the teams of different plant varieties (available in Material for pupils).
- Solutions to the activities for the teams of different plant varieties

### Evaluación

- Checking the worksheets (once corrected by the students in another colour).
- Co-evaluation of teamwork.
- Participation in group reflection. The critical stance of the students.
- Conclusions and engagement in small groups.

## 2.3. AFTER ACCESSING RESOURCES

### *The germination of knowledge*



**Time:** 3 hours

**Place:** Classroom

**Type of activity:** Introspective, prospective, tasting and artistic expression

#### Objetives

- Identify artistic language as a transformative language. Appreciate drawing for its informative and educational value.
- Raise awareness of biodiversity, food culture, local production and the importance of making informed decisions when consuming through the tasting of products derived from local varieties.
- Train the capacity to generate ideas of what actions can be taken to preserve seeds of local varieties.

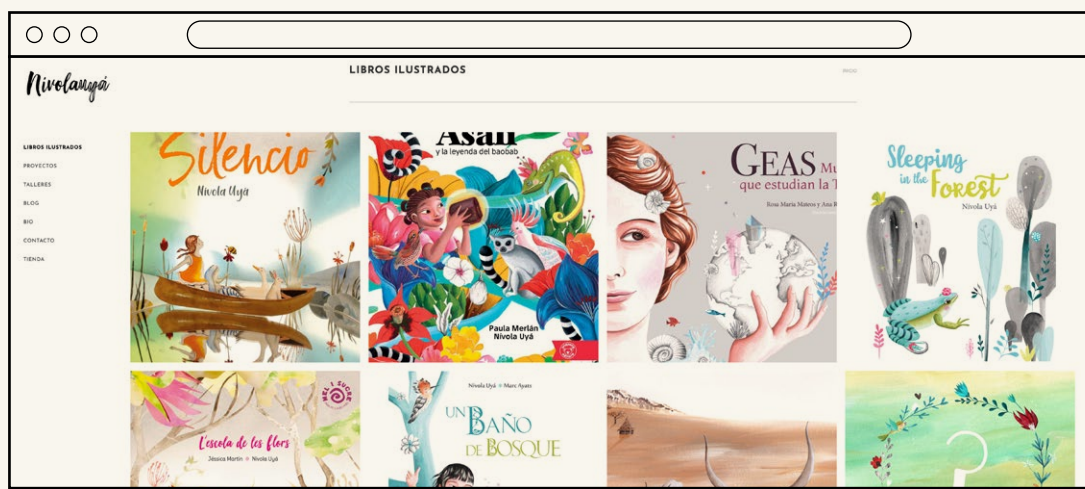
#### Contents

- Knowledge of the germination cycles of some varieties. Time lapse.
- The flipbook. 2D animation. FlipaClip App.
- Tasting products derived from local varieties of the region.
- Brainstorming based on a participatory dynamic.

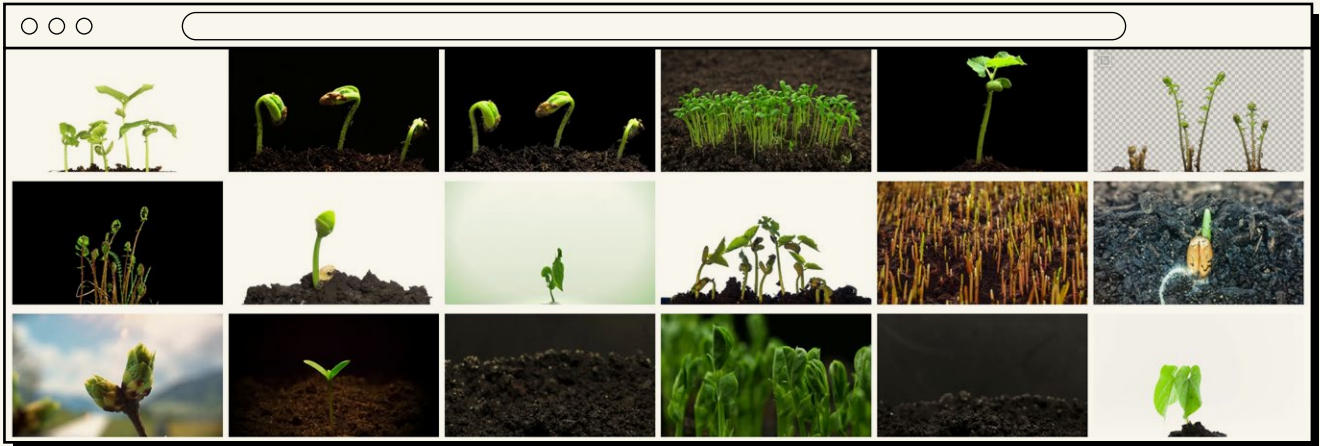
#### Activities


### 1. Make a flipbook!

To begin with, visit the website of [Nívola Uyá \(nivolauya.com\)](http://Nívola Uyá (nivolauya.com)), the illustrator in charge of creating the images that show the germination process of the four crops that make up the resources. A drawing can be appreciated for its informative and educational value. .



Author and illustrator with more than ten years of experience creating unique and soulful illustrated pieces and visual projects. She fuses art and nature in all its forms. She has created illustrations to accompany murals, campaigns, animations, and books, with hopeful views of reality and possibilities for transformation. The vision of uniqueness and naturalistic sensibility are present in her gaze.



 Youtube search: **Seed germination time lapse** ([https://www.youtube.com/results?search\\_query=seed+germination+time+lapse](https://www.youtube.com/results?search_query=seed+germination+time+lapse))

Then we move on to artistic creation. It is the students' turn. Based on the viewing of plant germination and growth processes in time lapse ([here](#) are some example videos that can be found by searching on Youtube: seed germination time lapse), they create a short 2D animation using the flipbook technique ([here](#) is how it is done / <https://www.youtube.com/watch?v=Un-BdBSOGKY>). First, search for time lapse videos and choose a plant, preferably from a local crop. Second, following the instructions on how to make a flipbook, the students create their own flipbook ([here](#) you can see a ready-made flipbook illustrating the growth of a plant). You will need paper, drawing tools, tweezers, a screen with a light or a window. Thirdly, the task will be digitised using the FlipaClip application ([here](#) is how it works).



**Flipbook illustrating the growth of a plant:**  
GROW flipbook  
<https://www.youtube.com/watch?v=J2xrN5WQuxw>



**FlipaClip Tutorial:** How to animate with FlipaClip  
<https://www.youtube.com/watch?v=HisHR0v4PEA>

We try to create a calm and relaxed atmosphere. One suggestion to create a suitable atmosphere is to play music to provoke introspection. To close, the different creations are shown in a large group and the students share what they wanted to transmit and how they felt.

The use of a flipbook to represent the process of plant germination and growth in an educational setting combines visualisation, active participation, creativity and understanding of sequences, providing an effective tool for teaching and learning about this fundamental natural process.

## 2. Are you hungry?

Conduct a tasting of products derived from local varieties of the region, such as bread or jams made from local cereals and fruit, with the main objective of raising awareness among students about biodiversity, food culture, local production and the importance of making informed choices about what they eat. This activity can be an effective way to connect academic concepts with tangible and meaningful real-life experiences.



**Recommendation:** To find out where to buy local variety products nearby, you can search for "local produce market + your location".

These last two activities (*Make a flipbook!* and *Are you hungry?*) could be combined. Hold an exhibition of the flipbooks with a tasting of food produced with local varieties, inviting local seed preservation groups.



### 3. The wind blows and scatters its seeds

Participatory brainstorming exercise. The group stands in a circle with the chairs facing inwards. There will always be one person who will not be able to sit down because they are missing a chair. This person stands in the middle of the circle and shares an idea. Everyone in the group who thinks it is a good idea has to get up and find another chair to sit on. The person in the middle has to find a chair to sit in. Another person is now in the middle and the process repeats. The facilitator guides the type of ideas, actions and practices. First they focus for a few rounds on the individual, then a few rounds on the community and finally on the political at different levels (individual, community, political):

- **Individual:** What practices, customs and/or actions can we take individually to preserve local variety seeds and cultivated biodiversity?
- **Community:** In which actions do we need different people involved and organised?
- **Policy:** What mechanisms can we use to strengthen the protection and promotion of cultivated biodiversity at local, regional and national levels?



The brainstorming allows proposals for actions to emerge. From here each centre will decide which ones and how to proceed. The dance of seeds will have scattered the seeds (ideas, knowledge, reflections) and some of them will germinate (be put into action and put into practice).

**Recomendation:** It is recommended that a secretary be appointed from among the students to take note of the actions that arise.

#### Material

- Nívola Uyá website ([nivolauya.com](http://nivolauya.com))
- Videos: plant growth in time lapse, tutorial on how to make a flipbook, etc.
- Flipbook: paper, drawing tools, tweezers, light or window screen
- Electronic device for searching and using the FlipaClip App
- Products derived from local varieties in the region
- Optional: Seeds of local varieties to distribute to students who want to grow one of the varieties at home.

#### Evaluation

- The created flipbook.
- Through tasting and brainstorming, it will be possible to appreciate ideas and reflections as well as the degree of participation, consensus and dissent.

# Sources of information

## We play Wari

- Origins and rules of Wari: (<https://www.youtube.com/watch?v=HunzMxlbghQ>)
- How to play Wari: (<https://www.youtube.com/watch?v=rpK3pxv7uhY>)

## What is the Association of Local Varieties of Mallorca? What other similar association is there near your area?

- Web Associació de Varietats Locals de Mallorca (<https://www.varietatslocals.org/en>)
- What are local varieties? (<https://www.youtube.com/watch?v=2gRT4THKQag>)

## Plant variety teams

These videos are available in Mallorquín with English subtitles

- Mallorcan Barley: <https://youtu.be/sb8ksUgiLrA>
- Mallorcan Chickpea: <https://youtu.be/m9JtPZuEYLs>
- Ros Pepper: [https://youtu.be/\\_NcDnvAZsYM](https://youtu.be/_NcDnvAZsYM)
- Callet Grapevine: <https://youtu.be/5yLx33PmldU>

## Make a flipbook!

- Web Nívola Uyá ([nivolauya.com](http://nivolauya.com))
- outube search: Seed germination time lapse ([https://www.youtube.com/results?search\\_query=seed+germination+time+lapse](https://www.youtube.com/results?search_query=seed+germination+time+lapse))
- How to make a FLIPBOOK - Sheet by sheet animation tutorial (<https://www.youtube.com/watch?v=Un-BdBSOGKY>)
- GROW flipbook (<https://www.youtube.com/watch?v=J2xrN5WQuxw>)
- How to animate with FlipaClip - Free App for Ipad, ios and Android tablets and mobiles (<https://www.youtube.com/watch?v=vSI-UVEAncs>)

*Lluís Vidaña*

# The dance of seeds

*The germination of knowledge*

Material  
for students



Teaching guide

# TABLE OF DEFINITIONS

What do we already know?

Name: ..... Date: .....

Concepts	Individual work Own definition	Group work Other elements
Climate adaptation		
Crop seasonality		
Cultivated biodiversity		
Food sovereignty		
Generational renewal		
km0		
Local variety		
Oral memory		



<b>Plants</b>	
<b>Reproductive material</b>	
<b>Resilience</b>	
<b>Seeds</b>	
<b>Seed preservation</b>	
<b>Sustainable crops</b>	
<b>Sustainable Development Goals (SDGs)</b>	
<b>Traditional cultivation</b>	
<b>Transmission of knowledge</b>	



***Cicer arietinum***  
Ciuró mallorquí  
*Mallorcan chickpea*

## Team Chickpea

Date: .....

Names of the team members:

.....

.....

.....

**Welcome!** We present **Miquela Vanrell** who has a lot to tell you about the **Mallorcan chickpea**. Access her interview to complete the activities that follow:



<https://youtu.be/m9JtPZuEYLs>



**Miquela Vanrell**

Finca 5 elements, Alcúdia

**1. Order the germination cycle of the Mallorcan chickpea starting with the seed.**



**2. Answer the questions based on the interview that you have watched.**

**a.** Who owned Miquela's estate before her?

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**b.** What is needed when processing large quantities of chickpeas?

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**c.** What are the distinctive characteristics of the Mallorcan chickpea in terms of size, cooking texture and flavour, compared to chickpeas from other regions?

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- d.** What is the main use of the Mallorcan chickpea, for whom is it intended to be consumed, and what are the implications for the production process?

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- e.** What marketing channels do they use and in what form is the product sold

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- f.** What are the difficulties associated with chickpea production in Mallorca in contrast to production on the mainland?

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- g.** Why does a jar of Mallorcan chickpeas cost more than those coming from the mainland?

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- h.** Miquela feels lucky to have a farm where ..... seems to be the one the chickpea likes.

- i.** Why does Miquela consider that it makes no sense to take what little production there is on the island abroad?

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**j.** What day of the year are chickpeas sown and why?

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**k.** When and how is harvesting carried out?

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**l.** Why does Miquela think it is important to recover and maintain local varieties?

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**m.** How has the mentality towards agriculture evolved compared to previous generations?

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**n.** What is the relationship between the tourist industry and agricultural activity in Mallorca, and is it balanced?

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3. **Wordsearch.** Look for the following words that appear in the interview: boat, machinery, peninsula, taste, flour, sack, agribusiness, tourism, balance and fertiliser.

U	M	A	C	H	I	N	E	R	Y	G	U	O	L	S
Y	X	R	U	R	U	W	L	T	J	A	N	F	D	Y
W	N	M	L	R	Q	L	C	R	G	J	T	B	W	C
D	O	F	K	Y	M	Z	S	I	P	E	R	X	G	G
T	U	E	U	H	Z	E	W	J	P	W	E	S	K	N
O	T	R	F	P	N	D	S	J	I	O	B	T	O	G
U	F	T	R	U	O	L	F	T	A	O	B	E	G	T
R	E	I	A	U	A	L	U	S	N	I	N	E	P	L
I	E	L	J	Y	X	U	T	Y	U	E	T	K	E	Z
S	S	I	D	C	T	K	G	T	H	O	T	N	C	A
M	V	S	S	D	C	M	O	Y	Z	X	W	S	N	E
C	V	E	A	A	S	F	Z	V	L	V	Y	K	A	P
B	B	R	S	H	K	I	J	Z	T	H	W	P	L	T
A	G	R	I	B	U	S	I	N	E	S	S	G	A	I
J	R	G	I	N	V	V	S	S	G	S	Z	K	B	Q

### Word Bank

- |                 |               |         |          |
|-----------------|---------------|---------|----------|
| 1. machinery    | 2. fertiliser | 3. boat | 4. flour |
| 5. tourism      | 6. balance    | 7. sack | 8. taste |
| 9. agribusiness | 10. peninsula |         |          |



**4. True or false? Indicate which of these statements are true and which are false. Correct the false ones.**

Miquela's farm belonged to her uncle before it was abandoned.	V	F
Cultivation requires many hands to process large quantities	V	F
The Mallorcan chickpea has a taste that reminds the elderly of times gone by.	V	F
The legume has been mainly used in culinary recipes, both as a seasoning and cooked.	V	F
Chickpeas are intended for animal consumption and therefore do not require a very careful cleaning process.	V	F
Miquela only sells her chickpeas in (dry) sacks.	V	F
The price of the jar of Mallorcan chickpeas is cheaper than the jar from the mainland.	V	F
Miquela's father tells his daughter that work in the fields used to be very hard.	V	F
According to Miquela it is better to bring everything that is eaten in Mallorca by boat from the mainland.	V	F
The root of the chickpea plant leaches nitrogen into the soil (natural fertiliser).	V	F

**5. Reflect on the following question: How has the balance between the tourism industry and agricultural activity evolved in Mallorca, and what is the importance of maintaining a sustainable and balanced relationship between the two sectors?**

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**Callet . *Vitis vinifera***  
Raïm Negre varietat Callet  
*Red grape variety Callet*

## Team Grape

Date: .....

Names of the team members:

.....

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**Welcome!** We present **Rosa Pons** who has a lot to tell you about the **red grape variety Callet**. Access her interview to complete the activities that follow:



<https://youtu.be/5yLx33PmIdU>

**Rosa Pons**

Can Axartell, Pollença





1. Order the germination cycle starting with the cutting and ending with the seed.



2. Answer the questions based on the interview that you have watched.

a. What is Rosa Pons' profession?

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b. What crops do you grow on the Can Axartell estate?

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c. What is phylloxera? What happened in Mallorca when phylloxera arrived?

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**d.** Why is there interest in recovering varieties such as the Callet?

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**e.** What are the characteristics of this grape variety?

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**f.** What makes staggered collection possible?

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**g.** What is the Callet variety adapted to?

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**h.** According to Rosa, globalisation standardises, but what are visitors looking for?

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**i.** What is the need for climate change in Mallorca?

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**j.** How long can the Callet vine live?

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**k.** What does she mean when she says that the vine is a creeper?

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**l.** How do you decide when the grape harvest starts?

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**m.** How is it harvested?

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**n.** How do they facilitate the expansion of local cultivation?

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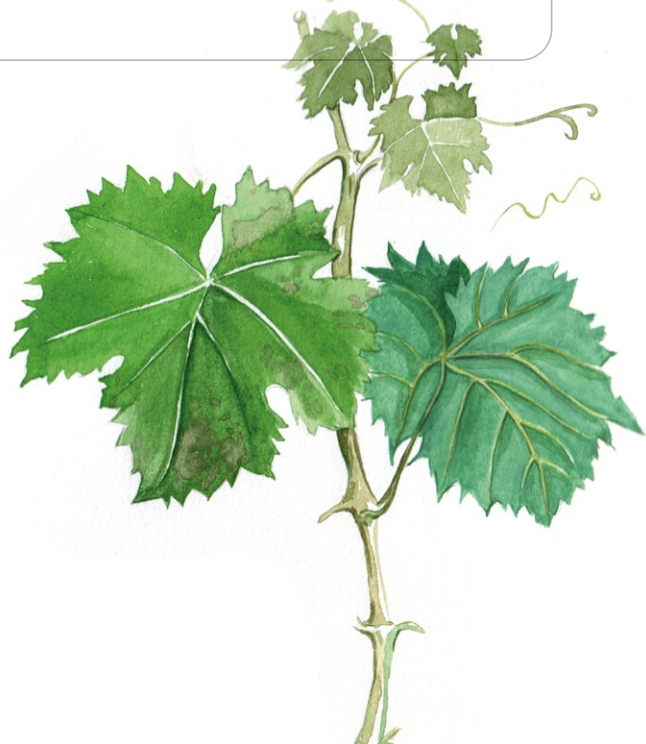
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3. **Wordsearch.** Look for the following words that appear in the interview: **phylloxera, grapevine, grape harvest, winery, vine, vine, fermentation, fruit, temperature, grape and vineyard.**

U	Y	L	Z	N	X	G	X	N	T	R	L	C	Q	V
A	S	H	P	X	L	D	R	A	Y	E	N	I	V	B
T	D	T	F	D	M	E	N	I	V	E	P	A	R	G
E	D	X	W	B	D	I	M	T	T	O	G	F	F	D
M	A	Q	G	O	Y	M	Y	C	R	E	E	P	E	R
P	C	A	V	A	L	Q	L	R	B	U	V	Q	A	L
E	C	G	I	Y	C	U	L	I	L	K	I	R	Y	W
R	D	F	E	R	M	E	N	T	A	T	I	O	N	I
A	G	R	A	P	E	H	A	R	V	E	S	T	H	N
T	P	T	I	U	U	Y	Q	N	Y	N	O	K	B	E
U	H	P	H	Y	L	L	O	X	E	R	A	T	K	R
R	Z	T	J	H	W	D	V	M	F	T	S	E	P	Y
E	P	E	E	R	T	T	I	U	R	F	R	A	M	J
Y	N	I	F	F	R	T	G	D	P	N	U	Z	E	R
Y	G	Q	M	J	F	G	Y	H	H	Q	X	Y	J	N

#### Word Bank

- |                 |                  |              |                |
|-----------------|------------------|--------------|----------------|
| 1. grapeharvest | 2. phylloxera    | 3. pest      | 4. winery      |
| 5. grapevine    | 6. creeper       | 7. fruittree | 8. temperature |
| 9. vineyard     | 10. fermentation |              |                |





**4. True or false? Indicate which of these statements are true and which are false. Correct the false ones.**

The Merlot and Syrah are French vines.	V	F
The solution to resist the phylloxera plague was to graft the grape varieties onto African rootstock	V	F
Wine made from callet has a pepper-like taste.	V	F
The callet allows different types of wine to be made: white, rosé, red.	V	F
The vine is a plant that is planted every year.	V	F
The vines never have to be watered.	V	F
The grape harvest begins on the 1st of September.	V	F
The grapes are harvested by a team of local people.	V	F
The grapes are harvested by hand.	V	F
The grapes are harvested by hand.	V	F

**5. Reflect on the following question: What challenges does viticulture face in a context of climate change and droughts, and how can local varieties be a solution?**



***Hordeum vulgare***  
Ordi mallorquí  
*Mallorcan barley*

## Team Barley

Date: .....

Names of the team members:

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**Welcome!** We present **Cosme Soler** and **M<sup>a</sup> Eulalia Adrover**, who have a lot to tell you about **Mallorcan barley**. Access their interview to complete the following activities:



<https://youtu.be/sb8ksUgiLrA>

**COSME SOLER / MA EULÀLIA ADROVER**

Son Soler, felanitx



**1. Order the germination cycle of Mallorcan barley starting with the seed.**



**2. Answer the questions based on the interview that you watched.**

**a.** What was the profession of Cosme's parents? Do their children help them in the fields

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**b.** How do M<sup>a</sup> Eulalia and Cosme distribute their tasks? What does each of them do more of?

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**c.** What advantages does Mallorcan barley have over other imported varieties?

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**d.** What are the characteristics of Mallorcan barley?

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**e.** What uses is barley put to on the Son Mesquida estate?

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**f.** What does the term "local variety" mean for M<sup>a</sup> Eulalia and Cosme?

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**g.** What is the sifting process?

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**h.** According to Cosme: "Mallorca for its small size has a lot of variety" .....

**i.** What is the name given to the farmer in charge of producing and increasing the quantity of seeds of certain plant varieties, ensuring their availability for future sowing?

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**j.** Why is it difficult to multiply and save seeds of some local varieties?

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**k.** How has the perception of local varieties changed in recent times?

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**l.** Why does Cosme consider that the cultivation of Mallorcan barley is not so much a cultural question as a necessity

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**m.** How does M<sup>a</sup> Eulalia describe the mentality and attitude that a farmer should have towards his work?

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**n.** Why does Cosme find his work in agriculture and animal husbandry rewarding?

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3. **Wordsearch.** Look for the following words that appear in the interview: family, pigs, sheep, grinder, humidity, microclimate, cereal, sift, love and quality.

E	C	C	F	B	L	M	M	D	Z	D	N	M	G	C
M	I	C	R	O	C	L	I	M	A	T	E	I	C	Z
D	U	W	A	S	U	E	J	W	M	N	Y	R	Z	H
R	A	X	C	Q	U	A	L	I	T	Y	C	L	Z	F
A	D	O	V	C	S	N	R	V	Y	P	Z	M	M	F
J	S	Z	S	Q	P	F	A	M	I	L	Y	R	W	H
M	J	A	X	E	S	H	E	E	P	L	G	H	O	X
B	L	X	P	R	P	A	S	L	A	E	R	E	C	I
W	Z	S	E	U	R	V	Q	O	Q	M	R	O	H	S
B	F	H	A	T	G	R	I	N	D	E	R	L	P	E
G	L	M	T	S	B	S	T	L	V	W	Q	Q	K	W
P	I	G	S	I	N	K	X	P	V	X	X	N	E	F
E	X	H	N	O	P	E	M	N	X	N	O	P	R	P
S	E	K	Z	M	U	A	L	Y	T	F	I	S	E	K
H	Z	H	W	F	L	O	V	E	P	K	V	F	Z	N

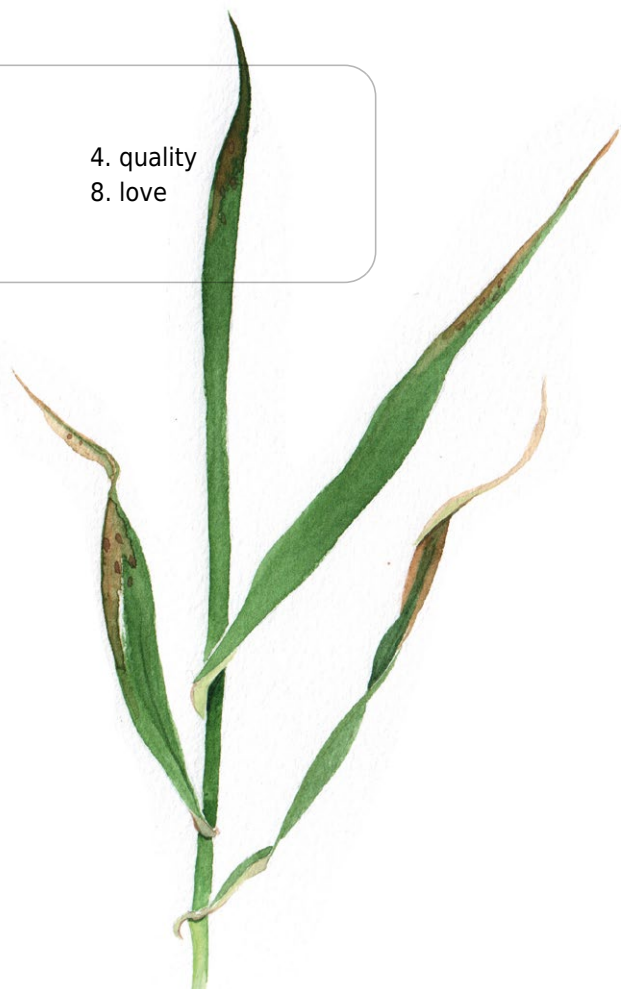
#### Word Bank

1. sheep  
5. sift  
9. cereal

2. grinder  
6. moisture  
10. microclimate

3. pigs  
7. family

4. quality  
8. love



**4. True or false? Indicate which of these statements are true and which are false. Correct the false ones.**

The land in Son Mesquida tends to have excess water.	V	F
Eulàlia and Cosme's children study but do not take part in the farm work.	V	F
Mallorcan barley is more productive than foreign varieties.	V	F
Mallorcan barley is more rustic and primitive compared to other varieties.	V	F
Eulàlia is mainly in charge of sowing barley.	V	F
On the Son Mesquida farm, the barley is used to fatten pigs, make flour and feed the hens.	V	F
Cleaning barley involves separating the grain from impurities.	V	F
Multiplying and saving seeds of local varieties is a simple process.	V	F
Local varieties are more highly valued than in the past.	V	F
Cosme finds his work rewarding and it brings him quality of life.	V	F

**5. Reflect on the following question: What are the differences between feeding animals on local farms with organic feed and feeding animals on large-scale farms with GM feed in relation to the quality of the feed and its effects on health and the environment?**

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***Capsicum annuum***

Pebre Ros

*Ros pepper*

## Team Pepper

Date: .....

Names of the team members:

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**Welcome!** We present **Cati Vaquer** who has a lot to tell you about the **ros pepper**. Access her interview to complete the activities that follow:



[https://youtu.be/\\_NcDnvAZsYM](https://youtu.be/_NcDnvAZsYM)

**Cati Vaquer**

Ca na Justa, Porreres



**1. Order the germination cycle of the Mallorcan pepper starting with the seed.**



**2. Answer the questions based on the interview that you watched.**

- a.** What has been the key to the success of the 4 generations that have dedicated themselves to planting local varieties in Ca Na Justa?

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- b.** By what other name does Catalina call the thin pink pepper?

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- c.** What are the advantages of thick ros peppers over thin ros peppers when it comes to consumption?

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**d.** How popular is the ros pepper in Mallorca and where is it most commonly found?

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**e.** What characteristics stand out in the taste and texture of the Mallorcan ros pepper?

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**f.** What curious coincidence does Catalina and her grandmother share about the origin of the ros pepper?

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**g.** Which peppers are selected for seed multiplication?

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**h.** Planting starts at the end of October until the month of .....  
(when sowing also starts).

**i.** Once the seed is extracted from the pepper, what do you do with it?

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**j.** In which generation of Catalina's family were hybrids introduced and what is their current status?

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**k.** What are young people's attitudes towards growing and consuming local and organic agricultural products?

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**l.** What are the Balearic Islands known for, and what should they also be known for?

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**m.** What colour do peppers turn when ripe?

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**n.** When thin ros peppers are harvested tender, is it to be eaten raw or cooked?

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3. **Wordsearch.** Look up the following words that appear in the interview: pepper, horticultural, generation, salad, seedling, heritage, culture, gastronomy, hybrid and sun.

F	Y	Y	P	E	P	P	E	R	S	Z	E	S	U	N
P	B	C	Y	X	J	S	K	D	S	B	H	W	C	W
I	H	D	U	O	X	J	W	A	Q	G	D	I	H	R
G	E	O	Y	L	N	O	I	T	A	R	E	N	E	G
C	A	T	S	G	T	L	A	S	E	R	J	S	R	L
O	D	Q	P	A	F	U	T	E	M	F	M	I	I	R
G	R	W	Q	N	L	R	R	G	S	Y	B	O	T	W
N	B	C	T	V	O	U	D	E	M	A	K	K	A	W
I	G	U	L	N	E	I	T	V	T	W	L	R	G	P
L	K	F	O	O	T	P	L	T	E	I	S	A	E	T
D	O	M	D	C	S	O	A	P	F	K	M	L	D	E
E	Y	K	A	B	G	S	E	H	Y	B	R	I	D	T
E	H	O	R	T	I	C	U	L	T	U	R	A	L	M
S	G	T	E	U	A	U	N	M	F	B	F	A	G	J
J	L	M	Z	K	W	O	G	Y	M	X	F	V	M	U

### Word Bank

1. hybrid  
5. sun  
9. seedling

2. heritage  
6. gastronomy  
10. horticultural

3. pepper  
7. culture

4. generation  
8. salad



**4. True or false? Indicate which of these statements are true and which are false. Correct the false ones.**

At Ca Na Justa they are dedicated to making vegetable seedlings of local varieties.	V	F
Catalina Vaquer is part of the second generation of plant breeders whose success has been to maintain the local varieties in maximum purity.	V	F
The farm has two varieties of peppers: the thin ros and the thick ros.	V	F
The thin ros pepper is also called "the thin man of Sant Joan".	V	F
The thin ros pepper is mainly used for roasting.	V	F
The ros pepper is not very popular in Mallorca. It is difficult to find in restaurants, markets and homes.	V	F
The ros pepper is known for its mild flavour and tender texture.	V	F
Ca Na Justa's clients are private individuals, not large companies.	V	F
The new generations in Mallorca show interest in growing and consuming local and organic agricultural products.	V	F
The twisted peppers are used to make seed.	V	F

**5. Reflect on the following question: What are the main challenges facing farming families in terms of sustainability, innovation and economic viability? Is generational renewal happening?**

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*Cicer arietinum* / Ciuró mallorquí / Mallorcan chickpea





**Callet . *Vitis vinifera* / Raim Negre varietat Callet / Red Grape variety Callet**











*Capsicum annuum* / Pebre Ros / Ros Pepper



# The dance of seeds

*The germination of knowledge*



This guide offers students and teachers multimedia content, games and interactive activities on seeds and traditional crop varieties, covering sustainability, botany, socio-economic and cultural concepts, among others. The guide is structured on the basis of a seed of each type of crop: vegetable, cereal, legume and fruit, through which you will learn more about each of the varieties and the people who have helped to preserve them.



This resource is available in English and Spanish  
at Centro de recursos Planea

